

REMARKS

Favorable reconsideration of this application is respectfully requested.

Claims 1-57 are pending in this application. Claims 1-14, 29-55, and 57 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. patent 6,462,682 to Hellberg in view of U.S. Patent Application Publication 2003/0161486 to Wu et al. (herein “Wu”). Claims 15-28 and 56 were rejected under 35 U.S.C. § 103(a) as unpatentable over Hellberg in view of U.S. patent 6,542,094 to Venkitachalam et al. (herein “Venkitachalam”) and Wu.

Addressing the above-noted rejections, those rejections are traversed by the present response as now discussed in further detail.

Each of the claims is amended by the present response to clarify features recited therein. Specifically, independent claim 1 now clarifies features of the “up sampler” by now reciting:

an up sampler for receiving an input signal at frequency F_{si} and for inserting $U-1$ zero points between sample signals and raising a sampling frequency U -fold to output an output signal at frequency UF_{si} .

The other independent claims are amended similarly as in independent claim 1. Such features are believed to be clear from the original specification, for example at page 22 and paragraph [0042]. The above-noted feature clarified in the claims is believed to be neither taught nor suggested by the applied art. That is, applicants respectfully submit the cited art does not disclose or suggest an up sampler that performs *two* different functions, namely inserting $U-1$ zero points between sample signals *and raising a sampling frequency U -fold so an input signal of frequency F_{si} is converted into an output signal at frequency UF_{si}* .

With respect to the feature of the claimed “up sampler” the outstanding rejection cites Hellberg at element 24 in Figure 18. However, applicants respectfully submit element 24 in

Figure 18 in Hellberg is not disclosed to “rais[e] a sampling frequency U-fold to output an output signal at frequency UF_{si} ” based on an input signal “at frequency F_{si} ”.

With respect to element 24, Hellberg states at column 10, lines 19-21:

In this embodiment an interpolator 24 inserts an integer number U of interpolated (exact) samples between every pair of input samples.

Hellberg does not disclose other operations of the interpolator 24, and particularly does not disclose or suggest interpolator 24 additionally operates for “raising a sampling frequency U-fold to output an output signal at frequency UF_{si} ” based on an input signal “at frequency F_{si} ”. Thereby, applicants respectfully submit element 24 in Hellberg does not correspond to the claimed “up sampler”.

Moreover, no teachings in any of the further cited references to Wu or Venkitachalam were cited with respect to the above-noted up sampler, and no teachings in Wu or Venkitachalam are believed to cure the above-discussed deficiencies in Hellberg.

In such ways, applicants respectfully submit the claims as currently written positively recite features neither taught nor suggested by the applied art, and thus patentably distinguish over the applied art.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully submitted that this case be passed to issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Customer Number

22850

Tel: (703) 413-3000

Fax: (703) 413-2220

(OSMMN 06/04)

Bradley D. Lytle
Attorney of Record
Registration No. 40,073

Surinder Sachar
Registration No. 34,423

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